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COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

Sub-Committee of Experts on the
Transport of Dangerous Goods

REPORT OF THE SUB-COMMITTEE OF EXPERTS ON ITS THIRTEENTH SESSION

(Geneva, 7-17 July 1997)

Addendum 2

Annex 2

1. Draft amendments to the Model Regulations annexed to the tenth revised edition of the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/Rev.10)

2. Draft amendments to the Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.2)

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1. DRAFT AMENDMENTS TO THE MODEL REGULATIONS ANNEXED TO THE TENTH REVISED EDITION OF THE UNITED NATIONS RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS
(Refer to ST/SG/AC.10/1/Rev.10)

Table of contents

In 2.4.2, delete "and related" after "self-reactive".

Chapter 2.0

2.0.1.1 In the title of Division 4.1, delete "and related" after "self-reactive".

2.0.1.3 Amend this paragraph to read as follows:

"2.0.1.3 Certain substances or articles may be assigned to packing groups in accordance with their degree of danger. The packing groups have the following meanings:

Packing Group I: Substances or articles presenting high danger
Packing Group II: Substances or articles presenting medium danger
Packing Group III: Substances or articles presenting low danger."

2.0.3 (c) Delete "and related" after "self-reactive".

[Add a new section 2.0.4 as follows:

"**2.0.4 Transport of samples**

2.0.4.1 When the hazard class of a substance is uncertain and it is being transported for further testing, a tentative hazard class, proper shipping name and identification number shall be assigned on the basis of the consignor's knowledge of the substance and application of:

(a) the classification criteria of these Regulations, and

(b) the precedence of hazards given in 2.0.3.

The most severe packing group possible for the shipping name chosen shall be used.

Where this provision is used the proper shipping name shall be supplemented with the word "sample" (e.g., FLAMMABLE LIQUID, N.O.S. Sample). In certain instances, where a specific proper shipping name is provided for a sample of a substance considered to meet certain classification criteria (e.g., GAS SAMPLE, NON-PRESSURIZED, FLAMMABLE, UN 3167) that shipping name shall be used.

2.0.4.2 Samples of the substance shall be transported in accordance with the requirements applicable to the tentative assigned proper shipping name provided:

(a) The substance is not considered to be a substance prohibited for transport by 1.1.2;

(b) The substance is not considered to meet the criteria for Class 1 or considered to be an infectious substance or a radioactive material;

(c) The substance is in compliance with 2.4.2.3.2.5(b) or 2.5.3.2.5.1 if it is a self-reactive substance or an organic peroxide, respectively;

(d) The sample is transported in a combination packaging with a net mass per package not exceeding 2.5 kg; and

(e) The sample is not packed together with other goods."]

Chapter 2.3

2.3.2.3 Replace sub-paragraph (b) with the following new sub-paragraph:

"(b) The mixture or any separated solvent does not meet the criteria for Division 6.1 or Class 8."

Chapter 2.4

2.4.1.1(a)
2.4.2
2.4.2.1(b)
2.4.2.3

Delete "and related" after "self-reactive".

2.4.2.3.1.1(b) Delete.

2.4.2.3.2 Delete "and related" after "self-reactive".

2.4.2.3.2.2 Delete.

2.4.2.3.2.3 Renumber as 2.4.2.3.2.2.

Figure 2.1 (b) Delete the footnote as well as the asterisk in the box of exit F.

2.4.2.4 Renumber the definition as 2.4.2.4.1.

Add a new paragraph 2.4.2.4.2 as follows:

"2.4.2.4.2 Substances that:

(a) have been provisionally accepted into Class 1 according to Test Series 1 and 2 but exempted from Class 1 by Test Series 6;

(b) are not self-reactive substances of Division 4.1;

(c) are not substances of Class 5;

are also assigned to Division 4.1: UN 2956, UN 3241, UN 3242 and UN 3251 are such entries."

Chapter 3.2

DANGEROUS GOODS LIST

Add Portable tank instruction "T34" in column 10 of the Dangerous Goods List for the following entries: UN 3229, UN 3230, UN 3239 and UN 3240.

UN 1305 Delete "INHIBITED" from the description in column (2).

Add the following new entry:

UN No	Name and description	Class or division	Subsidiary risk	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable Tanks	
							Packing instruction	Special provisions	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0501	PROPELLANT, SOLID	1.4C				NONE	114(b)			

Chapter 4.1

4.1.1.1 In the first sentence, replace the words "from any leakage" with "from any loss of contents".

4.1.13 Add "or 6.6.5" after "6.1.5".

4.1.1.8 Insert a new first sentence to read:

"Liquids may only be filled into inner packagings which have an appropriate resistance to internal pressure that may be developped under normal conditions of transport".

4.1.1.9 Add "or 6.6.5" after "6.1.5".

Add a new paragraph 4.1.1.15 as follows:

"4.1.1.15 During carriage, large packagings shall be securely fastened to or contained within the transport unit so as to prevent lateral or longitudinal movement or impact and so as to provide adequate external support. */"

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*/ Note by the secretariat: It seems that this kind of provision should be better placed in Chapter 7.1.

4.1.3.5 Amend to read:

"Packagings shall conform to the requirements of Chapter 6.1 or Chapter 6.3 and shall meet the test requirements of 6.1.5 or of 6.6.5 for Packing Group II, subject to 4.1.1.13 and 6.1.2.4.

4.1.5.1.1 Insert "or of Chapter 6.6" after "Chapter 6.1".

Chapter 4.2

4.2.1.11 Add "(other than Division 4.1 self-reactive substances)" after "Class 4 substances".

4.2.1.11.1 Add the following Note:

"Note: For Division 4.1 self-reactive substances, see 4.2.1.13.1."

4.2.1.13 Insert "and Division 4.1 self-reactive substances" after "Division 5.2 substances."

4.2.1.13.1 Replace "Organic peroxide" with "substance".

4.2.1.13.2 Replace "organic peroxides (Type F)" with "Type F organic peroxides or Type F self-reactive substances" in the first sentence.

Replace "organic peroxide" with "substance" in the second sentence.

4.2.1.13.3 Insert "or self-reactive substances" after "organic peroxides".

4.2.1.13.6
4.2.1.13.11
4.2.1.13.12
4.2.1.13.14

Replace "organic peroxide" with "substances".

4.2.1.13.15 Insert "and self-reactive substances" after "organic peroxides".

4.2.4.2.2 Amend the second sentence to read as follows:

"In T34, self-reactive substances of Division 4.1 and Division 5.2 organic peroxides permitted to be transported in portable tanks are listed along with the applicable control and emergency temperatures."

4.2.4.2.6 Amend the heading of portable tank instruction T34 to read as follows:

T34	PORTABLE TANK INSTRUCTION							T34
This portable tank instruction applies to self-reactive substances of Division 4.1 and to Division 5.2 organic peroxides. The general provisions of section 4.2.1 and the requirements of section 6.6.2 shall be met. The provisions specific to self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 in 4.2.1.13 shall also be met.								
UN No.	Substance	Min. test pressure (bar)	Min. shell thickness (mm-reference steel)	Bottom opening require-ments	Pressure relief require-ments	Filling limits	Control temp.	Emerg. temp.

In portable tank instruction T34, add the following new lines:

3229	SELF-REACTIVE LIQUID TYPE F	4	See 6.6.2.4.2	See 6.6.2.6.3	See 6.6.2.8.2 4.2.1.13.6 4.2.1.13.7 4.2.1.13.8	See 4.2.1.13.13		
3230	SELF-REACTIVE SOLID TYPE F	4	See 6.6.2.4.2	See 6.6.2.6.3	See 6.6.2.8.2 4.2.1.13.6 4.2.1.13.7 4.2.1.13.8	See 4.2.1.13.13		
3239	SELF-REACTIVE LIQUID TYPE F, TEMPERATURE CONTROLLED	4	See 6.6.2.4.2	See 6.6.2.6.3	See 6.6.2.8.2 4.2.1.13.6 4.2.1.13.7 4.2.1.13.8	See 4.2.1.13.13	*/	*/
3240	SELF-REACTIVE SOLID TYPE F, TEMPERATURE CONTROLLED	4	See 6.6.2.4.2	See 6.6.2.6.3	See 6.6.2.8.2 4.2.1.13.6 4.2.1.13.7 4.2.1.13.8	See 4.2.1.13.13	*/	*/

In portable tank instruction T34, add an asterisk in the columns "Control Temp." and "Emergency Temp." for UN 3119 and UN 3120 and add the following footnote:

*/ As approved by the competent authority.

Chapter 6.5

Add a new paragraph 6.5.1.4.4 as follows:

"6.5.1.4.4 The letter "W" may follow the IBC code. The letter "W" signifies that the IBC, although of the same type indicated by the code, is manufactured to a specification different from those in section 6.5.3 and is considered equivalent in accordance with the requirements in 6.5.1.1.2."

6.5.3.1.6 In sub-paragraph (a), replace the existing table with the following new table:

Capacity (C) in litres	Wall thickness (T) in mm			
	Types 11A, 11B, 11N		Types 21A, 21B, 21N, 31A, 31B, 31N	
	Unprotected	Protected	Unprotected	Protected
≤ 1000	2.0	1.5	2.5	2.0
> 1000 ≤ 2000	T=C/2000 + 1.5	T=C/2000 + 1.0	T=C/2000 + 2.0	T=C/2000 + 1.5
> 2000 ≤ 3000	T=C/2000 + 1.5	T=C/2000 + 1.0	T=C/1000 + 1.0	T=C/2000 + 1.5

In sub-paragraph (b), add "(see (c))" at the end of the definition of the variable Rm_1.

Add a new sub-paragraph (c) as follows:

"(c) For purposes of the calculation described in (b), the guaranteed minimum tensile strength of the metal to be used (Rm_1) shall be the minimum value according to national or international material standards. However, for austenitic steels, the specified minimum value for Rm according to the material standards may be increased by up to 15% when a greater value is attested in the material inspection certificate. When no material standard exists for the material in question, the value of Rm shall be the minimum value attested in the material inspection certificate."

Chapter 6.6

Renumber existing Chapter 6.6 as Chapter 6.7 and insert a new Chapter 6.6 as follows:

"**CHAPTER 6.6**

REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF LARGE PACKAGINGS

6.6.1 General

6.6.1.1 Large packagings are packagings consisting of an outer packaging which contains articles or inner packagings and which

(a) Are designed for mechanical handling;

(b) Exceed 400 kg net mass / 450 litres capacity but have a volume of not more than 3000 // (3 m^3).

The requirements of this Chapter do not apply to:

- Class 2, except articles including aerosols;
- Class 6.2, except clinical waste of UN 3291;
- Class 7 packages containing radioactive material.

6.6.2 Code for designating types of packagings

The code used for large packagings consist of:

(a) Two Arabic numerals:

50 for rigid large packagings; or
51 for flexible large packagings

(b) Capital letters in Latin characters indicating the nature of the material, e.g. wood, steel etc. The capital letters used shall be those shown in 6.1.2.6.

6.6.3 Marking

6.6.3.1 *Primary marking*. Each large packaging manufactured and intended for the use according to these Regulations shall bear durable and legible markings showing:

(a) The United Nations packaging symbol

;

For metal large packagings on which the marking is stamped or embossed, the capital letters "UN" may be applied instead of the symbol;

(b) The code "50" designating a large rigid packaging or "51" for flexible large packagings, followed by the material type in accordance with 6.5.1.4.1(b);

(c) A capital letter designating the packing group(s) for which the design type has been approved:

X for packing groups I, II and III
Y for packing groups II and III
Z for packing group III only;

(d) The month and year (last two digits) of manufacture;

(e) The State authorising the allocation of the mark; indicated by the distinguishing sign for motor vehicles in international traffic;

(f) The name or symbol of the manufacturer and other identification of the large packagings as specified by the competent authority;

(g) The stacking test load in kg. For large packagings not designed for stacking the figure "0" shall be shown;

(h) The maximum permissible gross mass in kilograms.

The primary marking required above shall be applied in the sequence of the sub-paragraphs.

6.6.3.2 *Examples of the marking:*

	50 A/X/05 2500/1000	96/N/PQRS	For a large steel packaging suitable for stacking; stacking load: 2500 kg; maximum gross mass: 1000 kg.
	50 H/Y04 0/800	95/D/ABCD 987	For a large plastics packaging not suitable for stacking; maximum gross mass: 800 kg.
	51H/Z/0697/S/1999 0/500		For a large flexible packaging not suitable for stacking; maximum gross mass: 500 kg.

6.6.4 Specific requirements for large packagings

6.6.4.1 ***Specific requirements for metal large packagings***

50A rigid steel large packagings
50B rigid aluminium large packagings
50N metal (other than steel or aluminium) large packagings

6.6.4.1.1 The large packaging shall be made of suitable ductile metal in which the weldability has been fully demonstrated. Welds shall be skillfully made and afford complete safety. Low-temperature performance shall be taken into account when appropriate.

6.6.4.1.2 Care shall be taken to avoid damage by galvanic action due to the juxtaposition of dissimilar metals.

6.6.4.2 ***Specific requirements for flexible material large packagings***

51H flexible plastics large packagings
51M flexible paper large packagings

6.6.4.2.1 The large packaging shall be manufactured from suitable materials. The strength of the material and the construction of the flexible large packagings shall be appropriate to its capacity and its intended use.

6.6.4.2.2 All materials used in the construction of flexible large packagings of types 51M shall, after complete immersion in water for not less than 24 hours, retain at least 85% of the tensile strength as measured originally on the material conditioned to equilibrium at 67% relative humidity or less.

6.6.4.2.3 Seams shall be formed by stitching, heat sealing, glueing or any equivalent method. All stitched seam-ends shall be secured.

6.6.4.2.4 Flexible large packagings shall provide adequate resistance to ageing and to degradation caused by ultraviolet radiation or the climatic conditions, or by the substance contained, thereby rendering them appropriate to their intended use.

6.6.4.2.5 For plastics flexible large packagings where protection against ultraviolet radiation is required, it shall be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives shall be compatible with the contents and remain effective throughout the life of the large packaging. Where use is made of carbon black, pigments or inhibitors other than those used in the manufacture of the tested design type, re-testing may be waived if changes in the carbon black content, the pigment content or the inhibitor content do not adversely affect the physical properties of the material of construction.

6.6.4.2.6 Additives may be incorporated into the material of the large packaging to improve the resistance to ageing or to serve other purposes, provided that these do not adversely affect the physical or chemical properties of the material.

6.6.4.2.7 When filled, the ratio of height to width shall be not more than 2:1.

6.6.4.2.8 Where used a liner shall be made of a suitable material. The strength of the material used and the construction of the liner shall be appropriate to the capacity of the large packagings and the intended use. Joins and closures shall be sift-proof and capable of withstanding pressures and impacts liable to occur under normal conditions of handling and transport.

6.6.4.3 ***Specific requirements for plastics large packagings***

50H rigid plastics large packagings

6.6.4.3.1 The large packaging shall be manufactured from suitable plastics material of known specifications and be of adequate strength in relation to its capacity and its intended use. The material shall be adequately resistant to ageing and to degradation caused by the substance contained or, where relevant, by ultraviolet radiation. Low temperature performance shall be taken into account when appropriate. Any permeation of the substance contained shall not constitute a danger under normal conditions of transport.

6.6.4.3.2 Where protection against ultraviolet radiation is required, it shall be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives shall be compatible with the contents and remain effective throughout the life of the outer packaging. Where use is made of carbon black, pigments or inhibitors other than those used in the manufacture of the tested design type, re-testing may be waived if changes in the carbon black content, the pigment content or the inhibitor content do not adversely affect the physical properties of the material of construction.

6.6.4.3.3 Additives may be incorporated in the material of the large packaging to improve the resistance to ageing or to serve other purposes, provided that these do not adversely affect the physical or chemical properties of the material.

6.6.4.4 ***Specific requirements for fibreboard large packagings***

50G rigid fibreboard large packagings

6.6.4 4.1 Strong and good quality solid or double-faced corrugated fibreboard (single or multiwall) shall be used, appropriate to the capacity of the large packagings and to their intended use. The water resistance of the outer surface shall be such that the increase in mass, as determined in a test carried out over a period of 30 minutes by the Cobb method of determining water absorption, is not greater than 155 g/m^2 - see ISO535:1991. It shall have proper bending qualities. Fibreboard shall be cut, creased without scoring, and slotted so as to permit assembly without cracking, surface breaks or undue bending. The fluting or corrugated fibreboard shall be firmly glued to the facings.

6.6.4.4.2 The walls, including top and bottom, shall have a minimum puncture resistance of 15 J measured according to ISO 3036:1975.

6.6.4.4.3 Manufacturing joins in the outer packaging of large packagings shall be made with an appropriate overlap and shall be taped, glued, stitched with metal staples or fastened by other means at least equally effective. Where joins are effected by gluing or taping, a water resistant adhesive shall be used. Metal staples shall pass completely through all pieces to be fastened and be formed or protected so that any inner liner cannot be abraded or punctured by them.

6.6.4.4.4 Any integral pallet base forming part of a large packaging or any detachable pallet shall be suitable for mechanical handling with the large packaging filled to its maximum permissible gross mass.

6.6.4.4.5 The pallet or integral base shall be designed so as to avoid any protrusion of the base of the large packaging that might be liable to damage in handling.

6.6.4.4.6 The body shall be secured to any detachable pallet to ensure stability in handling and transport. Where a detachable pallet is used, its top surface shall be free from sharp protrusions that might damage the large packaging.

6.6.4.4.7 Strengthening devices such as timber supports to increase stacking performance may be used but shall be external to the liner.

6.6.4.4.8 Where large packagings are intended for stacking, the bearing surface shall be such as to distribute the load in a safe manner.

6.6.4.5 ***Specific requirements for wooden large packagings***

50D natural wood large packagings
50C plywood large packagings

6.6.4.5.1 The strength of the materials used and the method of construction shall be appropriate to the capacity and intended use of the large packagings.

6.6.4.5.2 Natural wood shall be well seasoned, commercially dry and free from defects that would materially lessen the strength of any part of the large packagings. Each part of the large packagings shall consist of one piece or be equivalent thereto. Parts are considered equivalent to one piece when a suitable method of glued assembly is used as for instance Lindermann joint, tongue and groove joint, ship lap or rabbet joint; or butt joint with at least two corrugated metal fasteners at each joint, or when other methods at least equally effective are used.

6.6.4.5.3 Large packagings of plywood shall be at least 3-ply. They shall be made of well seasoned rotary cut, sliced or sawn veneer, commercially dry and free from defects that would materially lessen the strength of the large packaging. All adjacent plies shall be glued with water resistant adhesive. Other suitable materials may be used with plywood for the construction of the large packaging.

6.6.4.5.4 Large packagings of reconstituted wood shall be made of water resistant reconstituted wood such as hardboard, particle board or other suitable type.

6.6.4.5.5 Large packagings shall be firmly nailed or secured to corner posts or ends or be assembled by equally suitable devices.

6.6.4.5.6 Any integral pallet base forming part of a large packaging or any detachable pallet shall be suitable for mechanical handling with the large packaging filled to its maximum permissible gross mass.

6.6.4.5.7 The pallet or integral base shall be designed so as to avoid any protrusion of the base of the large packaging that might be liable to damage in handling.

6.6.4.5.8 The body shall be secured to any detachable pallet to ensure stability in handling and transport. Where a detachable pallet is used, its top surface shall be free from sharp protrusions that might damage the large packaging.

6.6.4.5.9 Strengthening devices such as timber supports to increase stacking performance may be used but shall be external to the liner.

6.6.4.5.10 Where large packagings are intended for stacking, the bearing surface shall be such as to distribute the load in a safe manner.

6.6.5 Test requirements for large packagings

6.6.5.1 ***Performance and frequency of test***

6.6.5.1.1 The design type of each large packaging shall be tested as provided in 6.6.5.3 in accordance with procedures established by the competent authority.

6.6.5.1.2 Tests shall be successfully performed on each large packaging design type before such a packaging is used. A large packaging design type is defined by the design, size, material and thickness, manner of construction and packing, but may include various surface treatments. It also includes large packagings which differ from the design type only in their lesser design height.

6.6.5.1.3 Tests shall be repeated on production samples at intervals established by the competent authority. For such tests on fibreboard large packagings, preparation at ambient conditions is considered equivalent to the provisions of 6.6.5.2.3.

6.6.5.1.4 Tests shall also be repeated after each modification which alters the design, material or manner of construction of large packagings.

6.6.5.1.5 The competent authority may permit the selective testing of large packagings that differ only in minor respects from a tested type, e.g. smaller sizes of inner packagings or inner packagings of lower net mass; and large packagings which are produced with small reductions in external dimension(s).

6.6.5.1.6 Where a large packaging has been successfully tested with different types of inner packagings, a variety of such different inner packagings may also be assembled in this large packaging. In addition, provided an equivalent level of performance is maintained, the following variations in inner packagings are allowed without further testing of the package:

(a) Inner packagings of equivalent or smaller size may be used provided:

(i) The inner packagings are of similar design to the tested inner packagings (e.g. shape - round, rectangular, etc);

(ii) The material of construction of the inner packagings (glass, plastics, metal etc.) offers resistance to impact and stacking forces equal to or greater than that of the originally tested inner packaging;

(iii) The inner packagings have the same or smaller openings and the closure is of similar design (e.g. screw cap, friction lid, etc);

(iv) Sufficient additional cushioning material is used to take up void spaces and to prevent significant movement of the inner packagings; and

(v) Inner packagings are oriented within the large packagings in the same manner as in the tested package;

(b) A lesser number of the tested inner packagings, or of the alternative types of inner packagings identified in (a) above, may be used provided sufficient cushioning is added to fill the void space(s) and to prevent significant movement of the inner packagings.

6.6.5.1.7 The competent authority may at any time require proof, by tests in accordance with this section, that serially-produced large packagings meet the requirements of the design type tests.

6.6.5.1.8 Provided the validity of the test results is not affected and with the approval of the competent authority, several tests may be made on one sample.

6.6.5.2 ***Preparation for testing***

6.6.5.2.1 Tests shall be carried out on large packagings prepared as for transport including the inner packagings or articles used. Inner packagings shall be filled to not less than 98% of their maximum capacity for liquids or 95% for solids. For large packagings where the inner packagings are designed to carry liquids and solids, separate testing is required for both liquid and solid contents. The substances in the inner packagings or the articles to be transported in the large packagings may be replaced by other material or articles except where this would invalidate the results of the tests. When other inner packagings or articles are used they shall have the same physical characteristics (mass, etc) as the inner packagings or articles to be carried. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package mass, so long as they are placed so that the test results are not affected.

6.6.5.2.2 Large packagings made of plastics materials and large packagings containing inner packagings of plastic materials - other than bags intended to contain solids or articles - shall be drop tested when the temperature of the test sample and its contents has been reduced to -18 °C or lower. This conditioning may be disregarded if the materials in question are of sufficient ductility and tensile strength at low temperatures. Where test sample are prepared in this way, the conditioning in 6.6.5.2.3 may be waived. Test liquids shall be kept in the liquid state by the addition of anti-freeze if necessary.

6.6.5.2.3 Large packagings of fibreboard shall be conditioned for at least 24 hours in an atmosphere having a controlled temperature and relative humidity (r.h). There are three options, one of which shall be chosen.

The preferred atmosphere is 23 ± 2°C and 50% ± 2% r.h. The two other options are: 20 ± 2°C and 65% ± 2% r.h.; or 27 ± 2°C and 65% ± 2% r.h.

Note: *Average values shall fall within these limits. Short term fluctuations and measurement limitations may cause individual measurements to vary by up to ± 5% relative humidity without significant impairment of test reproducibility.*

6.6.5.3 *Test requirements*

6.6.5.3.1 *Bottom lift test*

6.6.5.3.1.1 *Applicability*

For all types of large packagings which are fitted with means of lifting from the base, as a design type test.

6.6.5.3.1.2 *Preparation of large packagings for test*

The large packagings shall be loaded to 1.25 times its maximum permissible gross mass, the load being evenly distributed.

6.6.5.3.1.3 *Method of testing*

The large packagings shall be raised and lowered twice by a lift truck with the forks centrally positioned and spaced at three quarters of the dimension of the side of entry (unless the points of entry are fixed). The forks shall penetrate to three quarters of the direction of entry. The test shall be repeated from each possible direction of entry.

6.6.5.3.1.4 *Criteria for passing the test*

No permanent deformation which renders the large packagings unsafe for transport and no loss of contents.

6.6.5.3.2 *Top lift test*

6.6.5.3.2.1 *Applicability*

For types of large packagings which are intended to be lifted from the top and fitted with means of lifting, as a design type test.

6.6.5.3.2.2 ***Preparation of large packagings for test***

The large packagings shall be loaded to twice its maximum permissible gross mass.

6.6.5.3.2.3 *Method of testing*

The large packagings shall be lifted in the manner for which it is designed until clear of the floor and maintained in that position for a period of five minutes.

6.6.5.3.2.4 *Criteria for passing the test*

No permanent deformation which renders the large packagings unsafe for transport and no loss of contents.

6.6.5.3.3 *Stacking test*

6.6.5.3.3.1 *Applicability*

For all types of large packagings which are designed to be stacked on each other, as a design type test.

6.6.5.3.3.2 *Preparation of large packagings for test*

The large packagings shall be filled to its maximum permissible gross mass.

6.6.5.3.3.3 *Method of testing*

The large packagings shall be placed on its base on level hard ground and subjected to a uniformly distributed superimposed test load (see 6.6.5.3.3.4) for a period of at least five minutes, large packagings of wood, fibreboard and plastic materials for a period of 24 h.

6.6.5.3.3.4 *Calculation of superimposed test load*

The load to be placed on the large packagings shall be 1.8 times the combined maximum permissible gross mass of the number of similar large packagings that must be stacked on top of the large packagings during transport.

6.6.5.3.3.5 *Criteria for passing the test*

No permanent deformation which renders the large packagings unsafe for transport and no loss of contents.

6.6.5.3.4 *Drop test*

6.6.5.3.4.1 *Applicability*

For all types of large packagings as a design type test.

6.6.5.3 4.2 *Preparation of large packagings for testing*

The large packagings shall be filled in accordance with 6.6.5.2.1

6.6.5.3.4.3 *Method of testing*

The large packagings shall be dropped onto a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the large packagings considered to be the most vulnerable.

6.6.5.3.4.4 *Drop height*

Packing Group I	Packing Group II	Packing Group III
1.8m	1.2m	0.8m

***Note**: Packagings for substances and articles of Class 1, self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 shall be tested at the Packing Group II performance level.*

6.6.5.3.4.5 *Criteria for passing the test*

6.6.5.3.4.5.1 The large packagings shall not exhibit any damage liable to affect safety during transport. There shall be no leakage of the filling substance from inner packaging(s) or article(s).

6.6.5.3.4.5.2 No rupture is permitted in large packagings for articles of Class 1 which would permit the spillage of loose explosive substances or articles from the large packagings.

6.6.5.3.4.5.3 Where a large packagings undergoes a drop test the sample passes the test if the entire contents are retained even if the closure is no longer sift-proof.

6.6.5.4 *Certification and test report*

6.6.5.4.1 In respect of each design type of large packagings a certificate and mark (as in 6.6.3) shall be issued attesting that the design type including its equipment meets the test requirements.

6.6.5.4.2 A test report containing at least the following particulars shall be drawn up and shall be available to the users of the large packagings:

1 Name and address of the test facility;
2 Name and address of applicant (where appropriate);
3 A unique test report identification;
4 Date of the test report;
5 Manufacturer of the large packagings;
6 Description of the large packagings design type (e.g. dimensions, materials, closures, thickness, etc) and/or photograph(s);
7 Maximum capacity/maximum permissible gross mass;
8 Characteristics of test contents, e.g. types and descriptions of inner packagings or articles used;
9 Test descriptions and results;
10 The test report shall be signed with the name and status of the signatory.

6.6.5.4.3 The test report shall contain statements that the large packagings prepared as for transport was tested in accordance with the appropriate provisions of this Chapter and that the use of other packaging methods or components may render it invalid. A copy of the test report shall be available to the competent authority."

Index

Amend the index in accordance with the amendments adopted for Chapter 3.2.

2. DRAFT AMENDMENTS TO THE MANUAL OF TESTS AND CRITERIA (Refer to ST/SG/AC.10/11/Rev.2)

Figure 20.1 (b): Delete the asterisk and the footnote.

20.4.2 (f): Insert "or tanks" after "IBCs".

20.4.4.8: Delete "(organic peroxides only)" after "tanks".

26.1.1: Delete "(organic peroxides only)" after "or tank-containers".